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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,029	08/20/2001	Kimikazu Matsumoto	KUW.025	5229

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McGinn & Gibb, PLLC
Suite 200
8321 Old Courthouse Road
Vienna, VA 22182-3817

EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 02/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/932,029

Applicant(s)

MATSUMOTO, KIMIKAZU

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1 to 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of paper submitted under 35 U.S.C. 119(a)-(d), claiming priority from Japanese Patent Application No. 2000-250902 Pat. Filed On August 22, 2000 which papers have been placed of record in the file.

Information Disclosure Statement

Acknowledgment is made of receipt of Applicant's Information Disclosure Statement (PTO-1449) filed on August 20, 2001.

The references on PTO 1499 submitted on 08/20/01 are acknowledged. All the cited references have been considered. However the foreign patents and documents cited by applicant are considered to the extent that could be understood from the abstract and drawings.

Drawings

The drawings filed on august 20, 2001 have been accepted

Claim Rejections - 35 USC § 112

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Claims 1 to 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 10 and 19 the phrase, " deformation like a spray patterned fallen within the range" it is not clear what applicants' intend to include/exclude from the claims.

If Applicants' mean " deformation state by splay and falling within the range" the same should be clearly recited.

Similarly, " deformation like a bent line and fallen within the range" may be recited as " deformation state by bent and falling within the range" and " third elastic coefficient concerning a twist deformation" may be recited as " third elastic deformation state by twist " (claim 3).

In claim 5, " plural pixel electrode is spaced from and said part of said common electrode " may be better phrased.

Other dependent claims are rejected at least for depending upon rejected independent claims.

Applicants' cooperation is sought to correct the numerous grammatical and other errors like the ones listed above in the claims which appear to be a literal translation from a foreign language and does not confirm to normal English.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 27 to the extent understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPR (Applicants' Admitted Prior Art, e.g. figs. 1-2 and specification pages at least 3 to 5) and Yamakita et al. (U.S. Published Patent Application No. 2002/0154262, herein after Yamakita).

With respect to claim 1, to the extent understood, AAPR describes an in-plane switching type liquid crystal display unit including: a pair of substrate structures (AAPR figs. 300 and 400) having at least plural pixel electrodes (AAPR fig. 1 # 58, specification page 3 line 5 from bottom) and a common electrode on one of the substrate structures thereof (AAPR fig. 1 # 53) and a liquid crystal layer sandwiched between said substrate structures (fig. 1 # 70).

AAPR does not specifically describe its liquid crystal layer having a first elastic coefficient concerning a deformation like spray pattern to fall within the range expressed as 6 Pico Newton < said first elastic coefficient < 25 Pico Newton. (i.e. between 6 and 25 pico-newtons).

However, Yamakita, in pages 11- 10 right hand column first three lines and last three lines describes liquid crystal layers with Spray elastic constant to be 9 and 12 pN in the overlapping range of 6 to 25 pN to form a transparent electrode which allows the

portions of the light located right above the electrodes to be used as a display portion, thus improving the transmittance.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Yamakita's liquid crystal layers having a Spray elastic constant to be 9 and 12 pN. In AAPR's device one of ordinary skill in the art would be motivated to make the above substitution to form a transparent electrode which allows the portions of the light located right above the electrodes to be used as a display portion, thus improving the transmittance (Yamakita page 2 last four lines).

With respect to claim 2, to the extent understood, wherein the liquid crystal of said crystal layer has a positive anisotropy of dielectric constant. (Yamakita page 11 line 2).

With respect to claim 3 to the extent understood, wherein the liquid crystal further has a second elastic coefficient concerning a deformation like a bend line and a third elastic coefficient concerning a twist deformation and said first elastic coefficient, said second elastic coefficient and said third elastic coefficient "satisfy an inequality expressed as $0.5 < ((K_{11} \times K_{33})/K_{22}) < 2.0$ ", where K_{11} is said first elastic coefficient, K_{33} is said second elastic coefficient and K_{22} is said third coefficient. (Yamakita page 10 last line and page 11 first three lines).

With respect to claim 4, to the extent understood, wherein the substrate structures are spaced from each other by a distance ranging from 1.0 micron to 6.0 microns. (Yamakita page 7 right hand col. Last 12 lines)

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With respect to claim 5, to the extent understood, wherein an electric field is created between each of said plural pixel electrode and a part of said common electrode under application of a potential difference there between and said each of said plural pixel electrode is spaced from and said part of said common electrode in a direction parallel to inner surfaces of said substrate structures by a distance ranging from 2 microns to 15 microns. (Yamakita page 7 right hand col. Last 15 lines).

With respect to claim 6, to the extent understood, wherein said substrate structures are spaced from each other by a first distance ranging from 1.0 micron to 6.0 micron, and each of said plural pixel electrodes and an associated part of said common electrode is spaced from each other in a direction parallel to inner surfaces of said substrate structures by a second distance ranging from 2 microns to 15 microns. (Yamakita page 8 last 12 lines).

With respect to claim 7, to the extent understood, wherein the plural pixel electrodes parts of said common electrode respectively associated with said plural pixel electrode and pieces of said liquid crystal layer respectively overlapped with combinations of said plural pixel electrodes and said parts from in combination plural pixels arranged in a matrix. (Yamakita fig. 5, page 8, right hand col., lines 7 to 24).

With respect to claim 8, to the extent understood, wherein the color filters selectively put in the primary three colors and contained in the plural pixels respectively. (Yamakita page 9, right hand col. Section [0141]).

With respect to claim 9, to the extent understood, wherein the plural pixel electrodes and said common electrode are formed on said one of said substrate

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structures together with data lines and thin film transistors selectively connected between said data lines and said pixel electrodes and said color filters are formed on the other of said substrate structures together with a black matrix. (Yamakita fig. 17 a etc.).

With respect to claim 10, to the extent understood, describes a pair of substrate structures having at least plural pixel electrodes (AAPR figs. 300 and 400) and a common electrode on one of the substrate structures thereof, (AAPR fig. 1 # 58, specification page 3 line 5 from bottom) and a liquid crystal layer(AAPR fig. 1 # 53) sandwiched between said substrate structures (fig.1 # 70)

AAPR does not specifically describe its liquid crystal layer having a first elastic coefficient concerning a deformation like a bent line to fall within the range expressed as 5 Pico Newton < said first electric coefficient < 20 Pico Newton. (i.e. between 5 and 20 pico-newtons).

However, Yamakita, in pages 11- 10 right hand column first three lines and last three lines describes liquid crystal layers with Spray elastic constant to be 18 pN in the overlapping range of 5 to 20 pN to form a transparent electrode which allows the portions of the light located right above the electrodes to be used as a display portion, thus improving the transmittance.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Yamakita's liquid crystal layers having a bent elastic constant to be 18 pN In AAPR's device one of ordinary skill in the art would be motivated to make the above substitution to form a transparent electrode which allows the portions of

the light located right above the electrodes to be used as a display portion, thus improving the transmittance (Yamakita page 2 last four lines).

With respect to claims 11 to 18 (to the extent understood) repeat the steps of claims 2 to 9 and are rejected for reasons stated under claims 2 to 8 above.

With respect to claim 19, to the extent understood, describes an in-plane switching type liquid crystal display unit including a pair of substrate structures (AAPR figs. 300 and 400) having at least plural pixel electrodes and a common electrode on one of the substrate structures thereof (AAPR fig. 1 # 58, specification page 3 line 5 from bottom) and a liquid crystal layer (AAPR fig. 1 # 53) sandwiched between said substrate structures (fig.1 # 70)

AAPR does not specifically describe its liquid crystal layer having a first elastic coefficient concerning a deformation like spray .

However, Yamakita, in pages 11- 10 right hand column first three lines and last three lines describes liquid crystal layers with Spray elastic constant to form a transparent electrode which allows the portions of the light located right above the electrodes to be used as a display portion, thus improving the transmittance.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Yamakita's liquid crystal layers having a Spray elastic constant in AAPR's device one of ordinary skill in the art would be motivated to make the above substitution to form a transparent electrode which allows the portions of the light located right above the electrodes to be used as a display portion, thus improving the transmittance (Yamakita page 2 last four lines). The other limitations of claim 19 are


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: and a second elastic coefficient concerning a deformation like a bent in, (Yamakita page 10 line1) the square root of the product between the first elastic coefficient and said second elastic coefficient being fallen within the near expressed as 5 Pico Newton $< \text{SQRT} < 20$ Pico Newton where SQRT is said square root of the product between said first elastic coefficient and said second elastic coefficient. (Yamakita page 10 right hand col. Last 3 lines to left hand col. First two lines).

With respect to claims 20 to 27 (to the extent understood) repeat the steps of claims 2 to 9 and are rejected for reasons stated under claims 2 to 8 above.

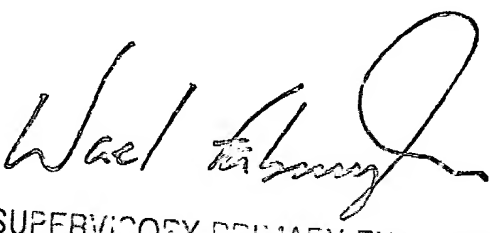
Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (703) 306-5984. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.


Steven H. Rao

Patent Examiner

February 04, 2003.


SUPERVISORY PRIMARY EXAMINER
TECHNOLOGY CENTER 2000